WHAT IS CLAIMED IS:

1. A ceramic catalyst body comprising a ceramic carrier capable of supporting a catalyst component directly on the surface of a substrate ceramic and a catalyst supported on the ceramic carrier, wherein the catalyst particles are provided with a layer containing an anti-evaporation metal formed at least in part of the outer surface of the catalyst metal particles.

2. The ceramic catalyst body according to claim 1, wherein the layer containing the anti-evaporation metal covers at least 10% of the outer surface of the catalyst metal particles.

3. The ceramic catalyst body according to claim 1, wherein the layer containing the anti-evaporation metal covers at least 50% of the outer surface of the catalyst metal particles.

4. The ceramic catalyst body according to claim 1, wherein the anti-evaporation metal is supported on the outer surface of the catalyst metal particles in the form of a metal, an oxide of the metal or an alloy.

5. The ceramic catalyst body according to claim 1, wherein the catalyst metal is a noble metal and the anti-evaporation metal is a high-melting point metal of which oxide has a melting point of 1,100°C or higher

6. The ceramic catalyst body according to claim 1, wherein the anti-evaporation metal has catalytic activity.

7. The ceramic catalyst body according to claim 1, wherein at least one kind selected from the group consisting of Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Rh, Ta, W and Ir is used as the anti-evaporation metal.

8. The ceramic catalyst body according to claim 1, wherein one or more of the elements that constitute the substrate ceramic of the substrate ceramic is substituted with an element other than the constituent element, and the ceramic carrier is capable of supporting the catalyst metal directly on the substituting element.

9. The ceramic catalyst body according to claim 8, wherein the catalyst metal is supported on the substituting element by chemical bonding.

10. The ceramic catalyst body according to claim 8, wherein the substituting element is one or more element having a d or an f orbit in the electron orbits thereof.

11. The ceramic catalyst body according to claim 1, wherein the ceramic carrier has a multitude of pores capable of directly supporting the catalyst on the surface of the substrate ceramic so that the catalyst metal can be supported directly in the pores.

12. The ceramic catalyst body according to claim 11, wherein the pores comprise at least one kind selected from the group consisting of defects in the ceramic crystal lattice, microscopic cracks in the ceramic surface and defects in the elements which constitute the ceramic.

13. The ceramic catalyst body according to claim 12, wherein the microscopic cracks measure 100 nm or less in width.

14. The ceramic catalyst body according to claim 12, wherein the pores have diameter or width 1,000 times the diameter of the catalyst ion to be supported therein, or smaller, and the density of pores is 1×10^{11} /L or higher.

15. The ceramic catalyst body according to claim 12, wherein the substrate ceramic includes cordierite as the main component, and the pores comprise defects formed by substituting a part of the constituent elements of the cordierite with metal element having different value of valence.

16. The ceramic catalyst body according to claim 15, wherein the defects comprise at least one of an oxygen defect or a lattice defect, and the density of cordierite crystal containing at least one defect in a unit crystal lattice of cordierite is set to 4×10^{-6} %

or higher.

17. A method of producing the ceramic catalyst body, which comprises immersing a ceramic carrier capable of supporting a catalyst directly on the surface of the substrate ceramic in a solution of a catalyst metal, sintering the ceramic carrier thereby to support the catalyst metal on the carrier, immersing the ceramic carrier in a solution of an anti-evaporation metal, and sintering the ceramic carrier thereby to form a layer containing the anti-evaporation metal at least in a part of the outer surface of the catalyst metal particles that are supported.

18. A ceramic catalyst body comprising a ceramic carrier capable of supporting a catalyst directly on the surface of a substrate ceramic and a catalyst component supported on the ceramic carrier, wherein a trap layer is provided at a position near the end face in the upstream of the flow of gas to be purified so as to trap a catalyst poisoning component included in the gas to be purified.

19. The ceramic catalyst body according to claim 18, wherein the trap layer is formed by supporting a trapping component which adsorbs the catalyst poisoning component on a carrier coated with porous ceramic on the surface thereof.

20. A ceramic catalyst body comprising a ceramic carrier capable of supporting a catalyst directly on the surface of a substrate ceramic and a catalyst component supported on the ceramic carrier, wherein a trapping component which adsorbs a catalyst poisoning component included in the gas to be purified is supported at least at the end face of the carrier in the upstream of the flow of gas to be purified, thereby providing a trap layer that traps the catalyst poisoning component.

21. The ceramic catalyst body according to claim 18, wherein the catalyst component includes a main catalyst component made of a noble metal and a promoter

component which receives the catalyst poisoning, while the promoter component is used as the trapping component which adsorbs the catalyst poisoning component.

22. A ceramic catalyst body comprising a ceramic carrier capable of supporting a catalyst directly on the surface of a substrate ceramic and a catalyst component supported on the ceramic carrier, wherein a catalyst which decomposes a compound generated through reaction with the catalyst poisoning component included in the gas to be purified is provided near the catalyst that receives catalyst poisoning.

23. The ceramic catalyst body according to claim 18, wherein one or more of the elements which constitute the substrate ceramic of the ceramic carrier is substituted with an element other than the constituent element, so that the carrier is capable of supporting the catalyst component directly on the substituting element.

24. The ceramic catalyst body according to claim 18, wherein the catalyst component is supported on the substituting element by chemical bonding.

25. The ceramic catalyst body according to claim 18, wherein the substituting element is one or more element having d or f orbit in the electron orbits thereof.

26. The ceramic catalyst body according to claim 18, wherein the ceramic carrier has a multitude of pores which are capable of supporting the catalyst directly on the surface of the substrate ceramic so that the catalyst component can be supported directly in the pores.

27. The ceramic catalyst body according to claim 18, wherein the pores comprise at least one kind selected from the group consisting of defects in the ceramic crystal lattice, microscopic cracks in the ceramic surface and defects in the elements which constitute the ceramic.

28. The ceramic catalyst body according to claim 27, wherein the microscopic cracks measure 100 nm or less

in width.

29. The ceramic catalyst body according to claim 27, wherein the pores have diameter or width 1,000 times the diameter of the catalyst ion to be supported therein, or smaller, and the density of pores is 1×10^{11} /L or higher.

30. The ceramic catalyst body according to claim 27, wherein the substrate ceramic includes cordierite as the main component, and the pores comprise defects formed by substituting a part of the constituent elements of the cordierite with metal element having different value of valence.

31. The ceramic catalyst body according to claim 30, wherein the defects comprise at least one of an oxygen defect or a lattice defect, and the density of cordierite crystal containing at least one defect in a unit crystal lattice of cordierite is set to 4×10^{-6} % or higher.

32. The ceramic catalyst body according to claim 18, wherein the ceramic carrier may have a shape of at least one kind selected from a group of honeycomb, pellet, powder, foam body, fiber or hollow fiber.

33. A method of regenerating a ceramic catalyst body comprising a ceramic carrier capable of supporting a catalyst directly on the surface of a substrate ceramic and a catalyst supported on the ceramic carrier, the method comprising providing a heating means for heating the carrier and heating the carrier thereby to decompose catalyst poisoning component and regenerate the catalyst when the catalyst performance has decreased due to catalyst poisoning.

34. A method of regenerating a ceramic catalyst body comprising a ceramic carrier capable of supporting a catalyst directly on the surface of a substrate ceramic and a catalyst supported on the ceramic carrier, the method comprising putting a catalyst poisoning component

into contact with a solution or gas containing acid or alkali, thereby to decompose the catalyst poisoning component when the catalyst performance has decreased due to catalyst poisoning.

35. A method of regenerating a ceramic catalyst body comprising a ceramic carrier capable of supporting a catalyst directly on the surface of a substrate ceramic and a catalyst supported on the ceramic carrier, the method comprising changing the gas atmosphere thereby to dissociate the catalyst poisoning component when the catalyst performance has decreased due to catalyst poisoning.

36. The method of regenerating the ceramic catalyst body according to claim 35, wherein the catalyst poisoning component is dissociated by exposing the catalyst to reduced pressure atmosphere, low-oxygen atmosphere or reducing atmosphere, as the changed gas atmosphere.

37. The method of regenerating the ceramic catalyst body according to claim 34 or 35, wherein the regeneration process is carried out with the ceramic catalyst body being mounted on an apparatus or removed therefrom.

38. A method of regenerating a ceramic catalyst body comprising a ceramic carrier capable of supporting a catalyst directly on the surface of a substrate ceramic and a catalyst supported on the ceramic carrier, the method comprising removing a catalyst poisoning component deposited on the catalyst component by a physical method when the catalyst performance has decreased due to catalyst poisoning.

39. The method of regenerating the ceramic catalyst body according to claim 38, wherein the physical method is either to apply vibration to the catalyst component, blow the catalyst with a gas, wash the catalyst with a solution or remove the poisoning component by brushing.

40. The method of regenerating the ceramic catalyst

body according to claim 38 wherein the physical method is applied either intermittently or continuously.

41. The method of regenerating the ceramic catalyst body according to claim 38, wherein the physical method is applied to a ceramic catalyst body which comprises a ceramic carrier capable of supporting a catalyst directly on the surface of a substrate ceramic and a catalyst supported on the ceramic carrier.